

## WHAT IS CLAIMED IS:

*Sub 1* 1. An electrical connector assembly adapted for forming a mechanical and an electrical connection between a component and a substrate, said connector assembly comprising:

5 a first connector half having a first array of mating elements and adapted for connection to said substrate; and

10 a second connector half, for mating with said first connector half, said second connector half having a second array of mating elements and adapted for connection with said component;

15 whereby mating said first and second connector halves electrically connects said component to said substrate.

2. An electrical connector assembly as recited in Claim 1, wherein said first connector half is adapted for connection to said substrate via an array of ball type contact portions on said first connector half that form an electrical connection with an array of electrical contacts on said substrate by way of solder reflow.

20 3. An electrical connector assembly as recited in Claim 1, wherein said second connector half connects to said component via an array of ball type contact portions on said component that form an electrical connection with an array of electrical contacts on said second connector half by way of solder reflow.

*Sub 2* 4. An electrical connector assembly as recited in Claim 1, wherein an array of electrical contacts on said substrate corresponds electrically to the an <sup>17</sup> array of ball type contact portions on said first connector half.

25 5. An electrical connector assembly as recited in Claim 1, wherein an array of ball type contact regions on said first connector half corresponds electrically to the first array of mating elements.

6. An electrical connector assembly as recited in Claim 1, wherein the first array of mating elements corresponds electrically to the second array of mating elements.

5 7. An electrical connector assembly as recited in Claim 1, wherein the second array of mating elements corresponds electrically to an array of electrical contacts on said second connector half.

10 *Sub 2* 8. An electrical connector assembly as recited in Claim 1, wherein an array of electrical contacts on said second connector half corresponds electrically to an array of ball type contact portions on said component.

15 9. An electrical connector assembly as recited in Claim 1, wherein an array of ball type contact portions on said first connector half is one of a column grid array, ceramic ball grid array, tab ball grid array and plastic ball grid array.

10. An electrical connector assembly as recited in Claim 1, wherein an array of ball type contact portions on said component is one of a column grid array, ceramic ball grid array, tab ball grid array and plastic ball grid array.

20 11. An electrical connector assembly as recited in Claim 1, wherein a mating element of said first array of mating elements has dual elongations for receiving a single elongation from a mating element of said second array of mating elements.

25 12. An electrical connector assembly as recited in Claim 1, wherein the first array of mating elements and first array of ball type contact portions are on opposing sides of said first connector half.

Sub B3

13. An electrical connector assembly as recited in Claim 1, wherein the second array of mating elements and an array of electrical contacts on said second connector half are on opposing sides of said second connector half.

5 14. An electrical connector assembly adapted for forming a mechanical and an electrical connection between a component and a connector half, said connector assembly comprising:  
10 a connector half, for mating with another connector half, having an array of mating elements and an array of electrical contacts; and  
15 an electrical component having an array of ball type contact portions attached thereto;

15. An electrical connector assembly as recited in Claim 14, wherein the array of mating elements and array of electrical contacts are on opposing sides of said connector half.

20 16. An electrical connector assembly as recited in Claim 14, wherein the array of mating elements corresponds electrically to the array of contact portions.

17. An electrical connector assembly as recited in Claim 14, wherein the array of contact portions corresponds electrically to the array of ball type contact portions.

25 18. An electrical connector assembly as recited in Claim 14, wherein said array of ball type contact portions is one of a column grid array, ceramic ball grid array, tab ball grid array and plastic ball grid array.

19. An electrical connector assembly as recited in Claim 14, wherein a mating element of said array of mating elements has dual elongations for receiving a single elongation from a mating element of another connector half.

20. An electrical connector assembly as recited in Claim 14, wherein a mating element of said array of mating elements has a single elongation for insertion between dual elongations of a mating element of another connector half.

5 Sub 04

21. A method of removably attaching an electronic device to a substrate, the electronic device having fusible elements thereon, the method comprising the steps of: mounting a first connector to the substrate; and fusing said fusible elements on the electronic device to contacts on a second connector, said second connector mateable with said first connector; wherein the electronic device is removably attached to the substrate without having to reflow the fusible elements.

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22. The method of claim 21, wherein the fusing step directly fuses said fusible elements to said contacts on said second connector.

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Sub 05

23. The method of claim 21, wherein said second connector includes a housing having a recess in which a tail of each of said contacts reside, and the fusing step at least partially occurs in said recess.

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24. In a ball grid array connector engageable with a mating connector mounted to a substrate, the ball grid array connector having a housing, contacts and fusible elements mounted to said contacts, wherein the improvement comprises said fusible elements being part of an electronic device so that said electronic device can removably attach to said substrate without having to reflow said fusible elements.

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25. The ball grid array connector as recited in claim 24, wherein said electronic device is one of a column grid array, ceramic ball grid array, tab ball grid array and plastic ball grid array.

